GINGKO

Thermo-Shaker

Cat.# MS-100

User Manual

ver: 1.1 en

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1. Introduction

•Thermo-Shaker MS-100 is designed for incubating and mixing aqueous solutions in sealed micro test tubes. It combines incubator and shaker functions in one. The incubation temperature can be precisely maintained between 5 °C above room temperature and 99 °C, and the shaker speed between 200 and 1500 revolutions per minute (rpm). The value of temperature and speed are independently set and controlled.

1.1 Features

•Independent control of time, temperature and shaking speed. Two-segment programmable parameter settings.
•Back lit LCD display.
•Simultaneous display of time, temperature and shaking speed.
•Over heating protection for safety & reliability
•Temperature can be calibrated to meet user's needs.
•Audio signal upon program completion.
•Various optional interchangeable blocks to accommodate different tubes & wells for your experimental needs. Blocks are easy to clean and sterilize. Customized blocks are available upon request.
•Four types of standard sample blocks are available: A-Block, 0.2 ml x 96 wells; B-Block, 0.5 ml x 54 wells; C-Block,1.5 ml x35 wells; D-Block: 2.0 ml x 35 wells.

1.2 Specifications

Performance

All specifications are valid at ambient temperatures from 5 ℃ to 30 ℃.
Temperature control range: from 5 ℃ above room temperature to 99 ℃
Temperature accuracy: ±0.5 ℃.
Heating rate: ~ 5.5 ℃/min.
Mixing frequency: 200 to 1,500 rpm.
Mixing stroke: 2 mm.
Timer range: 1 min to 99h 59 min.

Physical characteristics

Power supply: 100 - 120VAC, 50/60 Hz, 150W
Fuse: 250V 2.5A Φ5×20
Size (Width x Depth x Height): 30.0 x 21.2 x 18.0 cm
Weight: 7.0 kg

Operation ambient conditions

Relative humidity: < 70 %.
Temperature: 5℃ to 30 ℃.

2. Safety Precaution and Application Limitation

Thermo-Shaker is for research purpose and should be handled only by experienced laboratory personnel.

Thermo-Shaker must NOT be operated in a flammable environment and must NOT be used to mix/incubate explosive or highly reactive substances.

The operation ambient temperature is between 4 °C to 35 °C. The technical data is valid at ambient temperature between 15 °C and 35 °C.

When mixing and incubating toxic or pathogenic samples, safety regulations must be followed. In connection with this, please note that the plastic sample block lids is NOT a protective device; it only provides thermal insulation .

After transferring the device from a cold room to a warmer room, water may condense on the device. Do not use the device for approximately one hour to allow the condensation to dry.

Thermo-Shaker is an electrical device. Do not spill large quantities of liquid onto the device.

3. Cleaning and Maintenance

Disconnect the unit from the power source before cleaning. The unit should be cleaned with a soft, damp cloth or paper towel. Do not use harsh cleaner, organic solvent or aerosol spray. Do not submerge the unit to water. Do not use the unit near water sources.

4. Unpacking and Installation

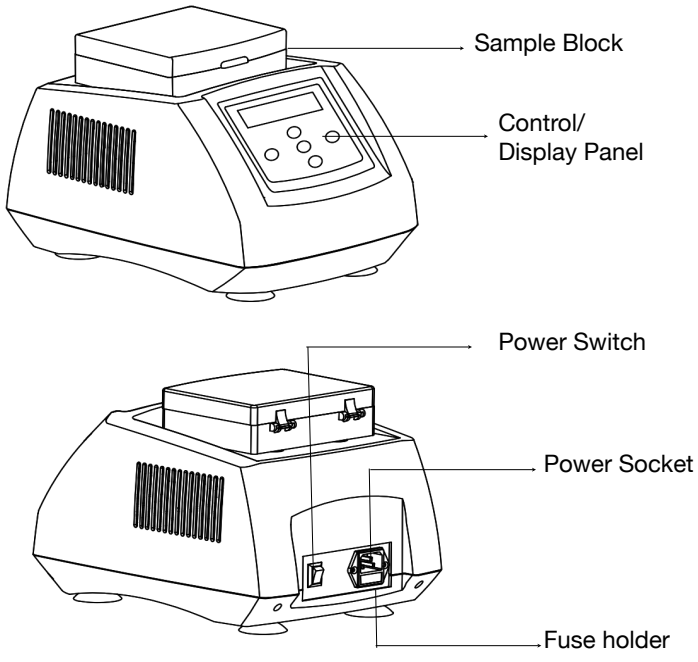
•Upon receiving your Thermo-Shaker, examine the package for any damage. In the event of shipping damage, a claim must be filed with the transportation carrier within 10 days.

•Remove the packing material and accessories from the box. Lift the unit out of the box. **Do not lift Thermo-Shaker by its sample block lid!**

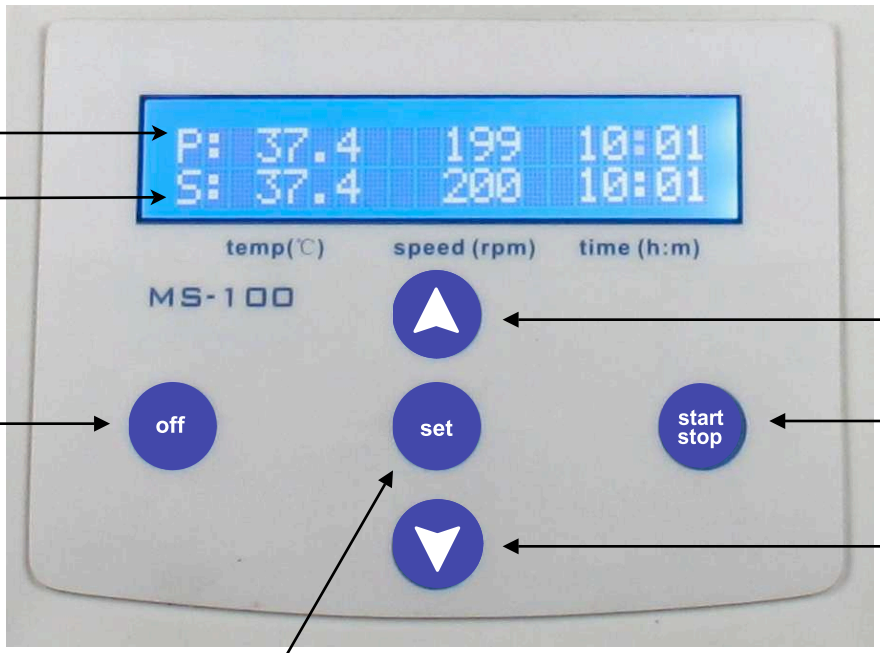
•The standard package includes: one Thermo-Shaker unit with one sample block pre-installed; one power cord and one User Manual. If you have ordered additional sample blocks, make sure that they are included in the special order package. If any item is missing, contact your vendor or Gingko Biotechnology's Service Department immediately. Save the original packaging until the unit has been shown to work properly.

•Place the device onto a flat, stable bench surface. To ensure sufficient ventilation, keep at least 10 cm of clearance space around Thermo-Shaker.

•*Check the label on the back panel to verify that the unit is rated your local power voltage.* Plug the device to a wall outlet (the electrical power cord is included in the delivery package). Turn on the switch located next to the power socket on the rear panel. It is advisable to carry out a test run at maximum speed to check the stability of the device and to ensure that it will move on the bench top during mixing.



5. Control Keys and Display Panel



True Value

Set Value

Turn on or off temperature / speed / time control

Increase temperature / speed / time

Start and stop a run; Press and hold to terminate current run

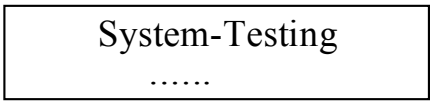
Decrease temperature / speed / time

Move cursor

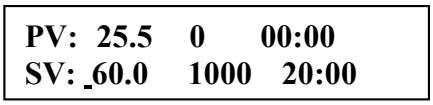
6. Operation Instructions

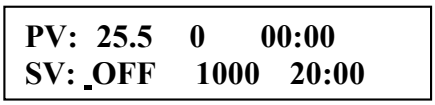
6.1 Turning on device

•Turn on the power switch located on the back. “System-Testing” should appear for about 6 seconds during a routine self-test of the device. Then, the parameter set values from previous run will appear, and the device will automatically heat up to the stored temperature set value.



6.2 Setting temperature, mixing speed and time





•***Setting*** control values of a run: After pressing “set” key once, device enters its programming mode, and a cursor appears. Press “set” key further to move the cursor to the value to be adjusted (temperature / speed / time). Adjust the value by pressing ▲ and ▼ keys.

•***Setting off*** control of temperature / speed / time: move cursor to the parameter to be turned off (i.e. uncontrolled) and press “off” key.

•“set” key is not functional while shaker is running.

•Time “OFF” means continuous operation.

•Parameters can not be set off altogether at the same time.

6.3 Routine run

•After setting the values, wait for 4 seconds until the cursor disappears.

•Press “start/stop” key to start the run.

•The temperature increases to the set value first, and then, shaker will start and time display starts to count down. After completion, device stops automatically; “Program Ends” appears on display panel and audio alert goes off.

•Press and hold down “start/stop” key for few seconds to manually stop the shaker. The temperature maintains its set value, and time display becomes “00:00”. Press “start/stop” again to restart the run.

6.4 Incubation-only mode

•Use “set” key to move cursor to under speed set value. Press “off” key to change the value to be ”OFF”.

•Wait about 4 sec till cursor disappears. Press “start/stop” key to start the incubator without shaking.

6.5 Mixing-only mode

•Use “set” key to move cursor to temperature set value. Press “off” key to change the value to ”OFF”.

•Wait till cursor disappears. Press “start/stop” key to start the shaker without temperature control.

6.6 Brief mix

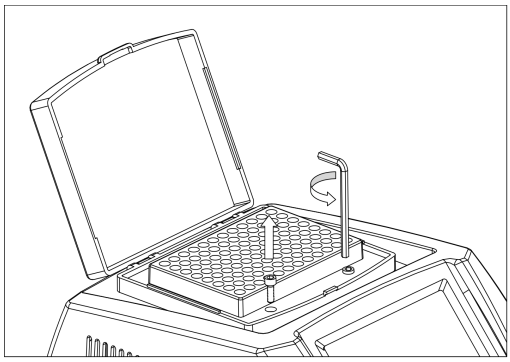
•Use the set key to move the cursor under time set value. Press ▲ or ▼ key to set the value to “00:00”.

•Press the “start/stop” key, and the device starts shaking for 6 sec at the set value of speed.

7. Change Sample Block

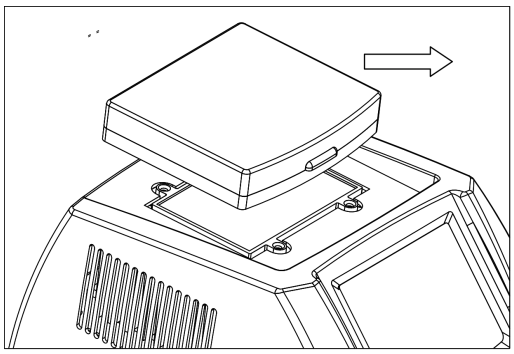
Before change the block, unplug the power cord to the unit!

The block may be hot. Protect hands if the unit has been used at elevated temperatures.

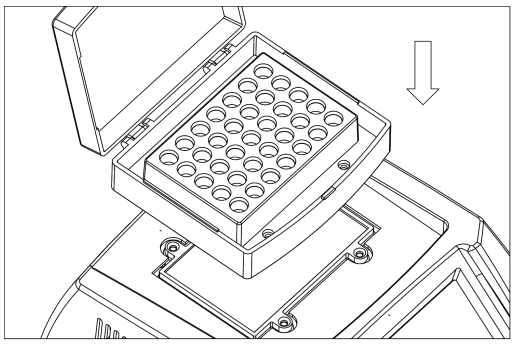


Block Removal

a) Open the transparent plastic lid and unscrew the four bolts as indicate

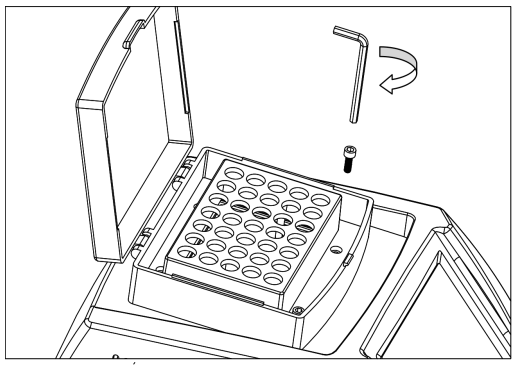


b) Close the lid, and move the block from the unit.



Block Installation

a) Line up the holes on the block with the holes on the device.



b) Place the four bolts to mounting holes and tighten the bolts with a hex wrench.

8. Troubleshooting

Error	Cause	Solution
No display.	No power. Blown fuse. Broken switch. Others.	Check and restore power. Replace fuse. Replace power switch. Contact vendor.
Large discrepancy between the displayed temperature and the actual.	broken sensor.	Contact vendor.
Temperature display shows “OPEN” or “SHORT”, and audio alarm turns on.	Ambient temperature < 0 ºC. Broken thermal sensor.	Increase ambient temp. Contact vendor.
Sample block does not heat up.	Broken thermal sensor.	Contact vendor.
Control key(s) does’t respond.	Broken membrane switch.	Contact vendor.